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Flexible collaboration transparency: supporting worker independence in replicated application-sharing systems

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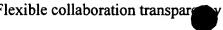Save this Article to a Binder   Display in BibTex Format

↑ ABSTRACT

This article presents a critique of conventional collaboration transparency systems, also called "application-sharing" systems, which provide the real-time shared use of legacy single-user applications. We find that conventional collaboration transparency systems are inefficient in their use of network resources and lack support for key groupware principles: concurrent work, relaxed WYSIWIS, and group awareness. Next, we present an alternative approach to implementing collaboration transparency that provides many features previously seen only in collaboration-aware applicaitons. Our approach is based on a replicated architecture where selected single-user interface components are dynamically replaced by multiuser versions. The replacement occurs at run-time and is transparent to the single-user application and its developers.. As an instance of this approach, we describe its incorporation into a Java-based collaboration transparency system for serializable, Swing-based Java applications, called Flexible JAMM (Java Applets Made Multiuser). To validate that the flexible collaboration transparency system is truly an improvement over conventional systems, we conducted an empirical study of collaborators performing both tightly and loosely coupled tasks using Flexible JAMM versus a representative conventional collaboration transparency system, Microsoft NetMeeting. Completion times were significantly faster in the loosely coupled task using Flexible JAMM and were not adversely affected in the tightly coupled task. Accuracy was equivalent for both systems. Participants greatly preferred Flexible JAMM.

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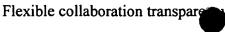
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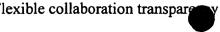
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Keywords:
Flexible JAMM, Java, application sharing, collaboration transparency, computer-supported cooperative work, groupware, usability

↑ **REVIEW**

"Michael Lee Gordon"

In this context, collaboration refers to several people using an application to edit a shared object (such as a whiteboard, text, or graphics document). Comparisons are made between collaboration-aware applications (those that were designed and implemented to provide multi-user sharing) and transparent collaboration techniques, in which a single-user application is provided with a runtime environment that permits multi-user collaboration. The authors review schemes for providing transparent collaboration, identifying the drawbacks and limitations of such solutions. Flexible collaboration transparency is an approach that allows collaborators to transition among varying patterns of collaboration. The authors describe a prototype implementation called Flexible JAMM (Java applets made multi-user), which is freely available at http://simon.cs.vt.edu/jamm/. This paper is a good backgrounder for readers interested in transparent collaboration techniques. *Online Computing Reviews Service*
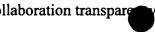
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↑ ABSTRACT

The ability to share synchronized views of interactions with an application is critical to supporting synchronous collaboration. This paper suggests a simple synchronous collaboration paradigm in which the sharing of the views of user/application interactions occurs at the window level within a multi-user, multi-window application. The paradigm is incorporated in a toolkit, DistView, that allows some of the application windows to be shared at a fine-level of granularity, while still allowing other application windows to be private. The toolkit is intended for supporting synchronous collaboration over wide-area networks. To keep bandwidth requirements and interactive response time low in such networks, DistView uses an object-level replication scheme, in which the applicaton and interface objects that need to be shared among users are replicated. We discuss the design of DistView and present our preliminary experience with a prototype version of the system.

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↑ **INDEX TERMS**

Primary Classification:
  H. Information Systems

⤷ **H.5** INFORMATION INTERFACES AND PRESENTATION (I.7)

Additional Classification:
D. Software

⤷ **D.1** PROGRAMMING TECHNIQUES

H. Information Systems

⤷ **H.2** DATABASE MANAGEMENT

⤷ **H.2.4** Systems

⤷ **Subjects:** Concurrency

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